1. Claim 1 (amended) An oriented strand board composite structure comprising:

a first oriented strand face having a layer of wood flakes mixed with a thermoset resin binder; said first oriented strand face defining a plane;

a second oriented strand face having a layer of wood flakes mixed with a thermoset resin binder, and

a core provided between said first oriented strand face and said second oriented strand face, said core comprising voids having boundaries are essentially orthogonal to said plane defined by said first oriented strand face; said voids extending between said first and second oriented strand faces.

Claim 2 (amended) A structure according to claim 37, wherein said core further comprises inorganic filler in the amount of about 10% to 80% by weight.

Claim 3 A structure according to claim 2, wherein said inorganic filler is one or more of clay, calcium carbonate, and titanium dioxide.

Claim 4 (amended) A structure according to claim 37, wherein said perforated mat is perforated such that it comprises between 0% and 75% voids by volume and wherein said core further comprises resin binder in an amount of less than 10% by weight.

Claim 5 (amended) A structure according to claim 37, wherein said perforated mat is perforated such that it comprises between 0% and 50% voids by volume and wherein said core further comprises resin binder in an amount of less than 5% by weight.

Claim 6 (amended) A structure according to claim 37, wherein said perforated mat consists essentially of paper mill sludge.

Claim 7 (amended) A structure according to claim 37, wherein said perforated mat consists essentially of recycled paper.

Claim 8 (amended) A structure according to claim 37, wherein said perforated mat consists essentially of vulcanized rubber.

Claim 9 (amended) A structure according to claim 37, wherein said perforated mat consists essentially of thermoset plastics.

Claim 10 A structure according to claim 4, wherein said perforated mat comprises one or more of paper mill sludge, recycled paper, vulcanized rubber, thermoset plastics, and volcanic rock.

Claim 12 (amended) A structure according to claim 38, wherein said core further comprises inorganic filler in the amount of 10% to 80% by weight.

Claim 13 A structure according to claim 12, wherein said inorganic filler comprises one or more of clay, calcium carbonate, and titanium dioxide.

Claim 14 (amended) A structure according to claim 38, wherein said core comprises between 0% and 75% voids by volume and wherein said core further comprises resin binder in an amount of less than 10% by weight.

Claim 15 (amended) A structure according to claim 38, wherein said core comprises between 0% and 50% voids by volume and wherein said core further comprises resin binder in an amount of less than 5% by weight.

Claim 16 (amended) A structure according to claim 38, wherein said compression-resistant material consists essentially of paper mill sludge.

Claim 17 (amended) A structure according to claim 38, wherein said compression-resistant material consists essentially of wood chips.

Claim 18 (amended) A structure according to claim 38, wherein said compression-resistant material consists essentially of recycled paper.

Claim 19 (amended) A structure according to claim 38, wherein said compression-resistant material consists essentially of vulcanized rubber.

Claim 20 (amended) A structure according to claim 38, wherein said compression-resistant material consists essentially of thermoset plastics.

Claim 21 (amended) A structure according to claim 38, wherein said compression-resistant material consists essentially of volcanic rock.

Claim 22 A structure according to claim 14, wherein said compression resistant material comprises one or more of paper mill sludge, wood chips, recycled paper, vulcanized rubber, thermoset plastics, and volcanic rock.

Claim 37 (new) A structure according to claim 1, wherein said compression-resistant core comprises a perforated mat that is oriented such that the perforation boundaries are essentially orthogonal to the plane defined by said first oriented strand face.

Claim 38 (new) A structure according to claim 1, wherein said compression-resistant core comprises a plurality of individual chunks of compression-resistant material that are oriented such that void boundaries are in a direction essentially orthogonal to the plane defined by said first oriented strand face.